

FORM PTO-1390	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371	ATTORNEY'S DOCKET NUMBER Edv/MAE BET 01/0599
INTERNATIONAL APPLICATION NO.: PCT/FR00/00598	INTERNATIONAL FILING DATE: 10 MARCH 2000 (10.03.00)	PRIORITY DATE CLAIMED: 11 MARCH 1999 (11.03.99)
TITLE OF INVENTION: BOX FOR SET OF ELECTRIC STORAGE BATTERIES		

APPLICANT(S) FOR DO/EO/US: Claude Mabe and Pierre Georges LENAIN

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information.

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
 2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
 3. ☒ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
 4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
 5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau *-in French language*).
 - b. ☐ has been transmitted by the International Bureau. (see attached copy of PCT/IB/308)
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
 6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
 7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)).
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau)
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
 8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
 9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
 10. ☐ A translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).
- Item 11. to 16. below concern document(s) or information included:
11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98
 12. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
 13. ☒ A **FIRST** preliminary amendment.
 - ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
 14. ☐ A substitute specification.
 15. ☐ A change of power of attorney and/or address letter.
 16. ☒ Other items or information: INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT/IPEA/409—in French language), INTERNATIONAL SEARCH REPORT (PCT/ISA/210), APPLICATION DATA SHEET, ABSTRACT

U.S. APPLICATION NO. (if known) 09/936231

INTERNATIONAL APPLICATION NO.
PCT/FR00/00598ATTORNEY'S DOCKET NO.
Edv/MAE BET 01/0599

CALCULATIONS PTO USE ONLY

17. ☒ The following fees are submitted:**BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5)):**

Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO

\$ 1,000.00

International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO

\$ 860.00

International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO

\$ 710.00

International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4)

\$ 690.00

International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4)

\$ 100.00

ENTER APPROPRIATE BASIC FEE AMOUNT =

\$ 860.00

Surcharge of \$130.00 for furnishing the oath or declaration later than months from the earliest claimed priority date (37 CFR 1.492(e)).

CLAIMS**NUMBER FILED****NUMBER EXTRA****RATE**

Total claims

8 - 20 =

0

X \$18.00

Independent claims

1 - 3 =

0

X \$90.00

MULTIPLE DEPENDENT CLAIMS(S) (if applicable)

+ \$270.00

TOTAL OF ABOVE CALCULATIONS =

\$ 860.00

Reduction of 1/2 for filing by small entity, if applicable. Applicant claims Small Entity Status under 37 CFR 1.27

+

SUBTOTAL =

\$ 860.00

Processing fee of \$130 for furnishing the English translation later than months from the earliest claimed priority date (37 CFR 1.49(f)).

TOTAL NATIONAL FEE =

\$ 860.00

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property

+

TOTAL FEES ENCLOSED =

\$ 900.00

Amount to be

refunded:

charged:

a. ☒ A check in the amount of \$ **900.00** to cover the above fees is enclosed.b. ☐ Please charge my Deposit Account No. **25-0120** in the amount of \$ to cover the above fees. A duplicate copy of this sheet is enclosedc. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required by 37 CFR 1.16 and 1.17, or credit any overpayment to Deposit Account No. **25-0120**. A duplicate copy of this sheet is enclosed

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September 12, 2001

By

Benoit Castel
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Registration No. 35,041**Customer Number: 000466**

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APPLICATION INFORMATION

Title Line One:: BOX FOR SET OF ELECTRIC STORAGE
Title Line Two:: BATTERIES
Total Drawing Sheets:: ONE
Formal Drawings?: YES
Application Type:: UTILITY
Docket Number:: EdV/MAE BET 01/0599

REPRESENTATIVE INFORMATION

Representative Customer Number:: 000466

CONTINUITY INFORMATION

This application is a::
>Application One::
Filing Date::

371 OF
PCT/FR00/00598
10 MARCH 2000

PRIOR FOREIGN APPLICATION

Foreign Application One::
Filing Date::
Country::
Priority Claimed::

99/03012
11 MARCH 1999
FRANCE
YES

0936231.001001

PATENTS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Claude Maurice DREULLE et al. Box Non-fee Amendment

Serial No. (unknown) GROUP

Filed herewith Examiner

BOX FOR SET OF ELECTRIC STORAGE BATTERIES

PRELIMINARY AMENDMENT

Commissioner for Patents

Washington, D.C. 20231

Sir:

Prior to the first Official Action and calculation of the filing fee, please amend the above-identified application as follows:

IN THE SPECIFICATION:

Page 1, after line 21, please insert the following paragraph:

--The document EP-A 0 575 060 discloses a box for a set of electric storage batteries, in which the side walls consist of an assembly of elementary stacked modules placed independently side by side. The document EP-A-0 405 803 discloses a box for the same use, which has no side walls and does not consist of an assembly of stacked modules, but of a pair of elements mounted opposite each other. These sets are stationary systems, not intended to be carried in an electric vehicle. They do not allow the rapid installation of several batteries at a time on the same pair of wall elements.--

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IN THE CLAIMS:

Cancel original claims 1-8.

ADD NEW CLAIMS 9-16:

- 9. Box for a set of electric storage batteries comprising at least two side walls (12, 14) extending parallel and defining between themselves a housing for receiving the batteries, the box being characterized in that the side walls (12, 14) consist of an assembly of stacked modules (16) each comprising a pair of wall elements (18, 20) mounted opposite each other.--
- 10. Box according to Claim 9, characterized in that each wall element (18, 20) is in the form of a profile and comprises at least one folded edge (24) that defines, jointly with a folded edge of the wall element mounted opposite it, a support for at least one row of batteries.--
- 11. Box according to Claim 9, characterized in that it also comprises battery retention means (38).--
- 12. Box according to Claim 11, characterized in that the retention means comprise a removable rod (38) extending through the folded edges (22, 24) of the stacked wall elements.--
- 13. Box according to Claim 9, characterized in that it also comprises two end plates (28, 30), each provided with fixing lugs (32) for the wall elements (18, 20).--

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REMARKS

Claims 1-8 were canceled. New claimss 9-16 were added.

Respectfully submitted,

YOUNG & THOMPSON

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September 12, 2001

Box for set of electric storage batteries

The present invention relates to a box for a set of electric storage batteries, particularly for an electric self-propelled vehicle, such as a maintenance machine and is particularly suitable for receiving batteries consisting of sealed elements of the gas re-combination type.

- 10 As is conventional, the power source used for electric vehicles is an assembly of batteries, each capable of delivering a voltage of the order of, for example, 2 volts. These batteries are placed in series or in parallel in a case placed in a housing provided for
15 this purpose in the vehicle.

- As will be appreciated, in order to reduce the number of battery charging and discharging cycles and so increase their life, a large number of batteries must
20 be carried in order for there to be sufficient electric power available.

- The object of the invention is to provide a battery box capable of containing a large number of electric
25 storage batteries within a small space.

- Its subject is therefore a box for a set of electric storage batteries comprising at least two side walls extending generally parallel and defining between
30 themselves a housing for receiving the batteries, the box being characterized in that the side walls consist of an assembly of stacked elementary modules each comprising a pair of wall elements mounted opposite each other.

35

In this way the overall volume of the box is adapted to the number of batteries carried, so that the amount of unoccupied free space is reduced.

The box according to the invention may also comprise one or more of the following characteristics, taken in isolation or in accordance with all technically

5 possible combinations:

- each wall element is in the form of a profile and comprises at least one folded edge that defines, jointly with a folded edge of the wall element mounted opposite it, a support for at least one
10 row of batteries;
- it also comprises battery retention means;
- the retention means comprise a removable rod extending through the folded edges of the stacked wall elements;
- 15 - it also comprises two end plates, each provided with fixing lugs for the wall elements;
- the end plates are provided with openings for the ventilation of the battery elements;
- the end plates are each provided with a handling
20 point for engagement by a lifting appliance.

The invention also relates to a system of boxes for a set of electric storage batteries characterized in that it consists of a set of boxes as defined above.

25

Other characteristics and advantages will become clear in the course of the description, which is given purely by way of example and with reference to the accompanying drawings, in which:

30

- Figure 1 is an exploded perspective view of a box in accordance with the invention; and
- Figure 2 is a perspective view of a module used in the construction of the box shown in Figure 1.

35

Figure 1 shows a battery box for an electric self-propelled vehicle, denoted by the general reference number 10 and positioned in what would be

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assumed to be a vertical position.

It is intended to receive a set of electric storage batteries, particularly sealed elements of the gas-recombination type, and to be placed in a housing
5 provided for this purpose in a vehicle so as to serve as a source of electric motive power.

10 The box 10 comprises two side walls 12 and 14 spaced apart and defining between themselves a housing in which the batteries are placed. For example, each battery is capable of delivering a voltage of the order of 2 volts.

15 With reference also to Figure 2, the side walls 12 and 14 are made up of an assembly of elementary interchangeable stacked modules, such as 16. The number of modules used depends on the number of batteries to be carried.

20 Each module 16 comprises a pair of wall elements 18 and 20 arranged opposite each other in the assembled condition.

25 Each wall element is in the form of a U section whose arms 22 and 24 point inwards into the housing and permit stacking of the wall elements on top of each other while its base 26 is designed to form after assembly, and jointly with the other wall elements of
30 the stack, the side wall proper of the box 10.

More specifically, in the assembled condition, the lower arms 24 of the opposing wall elements 18 and 20 together form a support designed to receive one or more
35 rows of electric storage batteries, these batteries being connected in series or in parallel.

Referring once again to Figure 1, the box 10 also

includes two end plates 28 and 30 attached to the free ends of the case composed of the assembled modules 16. At least one end plate is attached removably for the batteries to be placed in or removed from the box 10.

5

More specifically, each end plate 28 and 30 is provided with fixing lugs, such as 32, arranged in pairs with one elementary module 16 attached to each lug.

10 It will be seen that the dimensions of the end plates 28 and 30 are such as to space the wall elements 18 and 20 of each module 16 in such a way that the ends of the edges 24 are spaced apart by a distance shorter than the length or width of the batteries.

15

The end plates 28 and 30 are also provided with openings such as 34, to allow ventilation of the batteries placed in the box 10, and with a handling point 36 designed to engage with a lifting appliance
20 for raising the composite battery and setting it down.

Lastly, Figure 1 shows that the box 10 is completed by means of retention of the battery elements, in the form of a rod 38 inserted into orifices 40 (Figure 2) formed
25 in the folded edges 22 and 24 of the wall elements.

Other kinds of appropriate means of retention can of course be envisaged.

30 In the description of the invention, it has been assumed that the wall elements are in the form of U sections.

It would however be possible, as a variant, to equip
35 the box with modules having wall elements shaped differently e.g. in I sections, particularly in order to make a system of boxes by linking different boxes together.

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It will be realized that the battery box according to the invention, as described above, which uses a set of interchangeable modules, enables the total volume to be adapted to the number of batteries it contains and therefore enables its volume to be reduced in the sense that the amount of unoccupied space can in this way be limited.

10 Should it be wished to increase the number of batteries carried, either longer modules should be used and the same end plates retained, or the number of stacked modules should be increased, and the box provided with higher end plates as a consequence.

15 If it is wished to provide a power source of very large capacity, it is possible to produce a system of boxes formed of an assembly of several boxes built as described earlier, in which the batteries are connected
20 in series or parallel. In this arrangement, one or more modules may be common to all the boxes.

Furthermore, the edges of the wall elements allow a space to be defined between the racks of batteries
25 which, in conjunction with the openings formed in the side plates, allows for cooling of the battery elements by ventilation.

It will be noted too that the invention greatly facilitates the operations of assembling and disassembling the batteries, in that all that is required is simply to take off one of the side plates and if necessary to remove the retention rod to enable battery elements to be inserted or removed.

35 Finally, it will be noted that the invention described above greatly facilitates the operations of battery maintenance, as the ventilation openings allow access

to the battery elements. It is thus possible to measure the voltage available at the terminals of the battery elements without having to dismantle the box.

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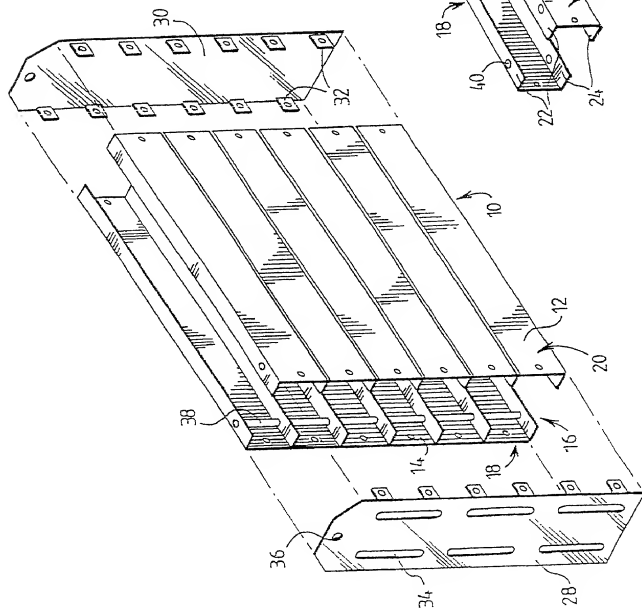
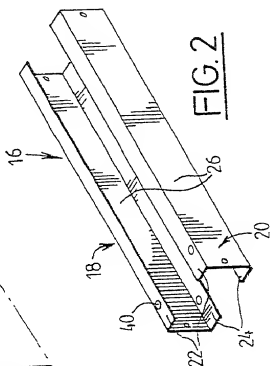
CLAIMS

1. Box for a set of electric storage batteries
5 comprising at least two side walls (12, 14)
extending generally parallel and defining between
themselves a housing for receiving the batteries,
the box being characterized in that the side walls
10 (12, 14) consist of an assembly of stacked modules
(16) each comprising a pair of wall elements (18,
20) mounted opposite each other.
2. Box according to Claim 1, characterized in that
15 each wall element (18, 20) is in the form of a
profile and comprises at least one folded edge
(24) that defines, jointly with a folded edge of
the wall element mounted opposite it, a support
for at least one row of batteries.
- 20 3. Box according to either of Claims 1 and 2,
characterized in that it also comprises battery
retention means (38).
4. Box according to Claim 3, characterized in that
25 the retention means comprise a removable rod (38)
extending through the folded edges (22, 24) of the
stacked wall elements.
5. Box according to any one of Claims 1 to 4,
30 characterized in that it also comprises two end
plates (28, 30), each provided with fixing lugs
(32) for the wall elements (18, 20).
6. Box according to Claim 5, characterized in that
35 the end plates are provided with openings (34) for
the ventilation of the battery elements.
7. Box according to either of Claims 5 and 6,

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characterized in that the end plates are each provided with a handling point (36) for engagement by a lifting appliance.

- 5 8. System of boxes for a set of electric storage
batteries, characterized in that it consists of an
assembly of boxes (10) according to any one of
Claims 1 to 7.

FIG. 1FIG. 2

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

BOX FOR SET OF ELECTRIC STORAGE BATTERIES

the specification of which: *(check one)*

REGULAR OR DESIGN APPLICATION

- ☒ is attached hereto.
- ☐ was filed on _____ as application Serial No. _____ and was amended on _____ (if applicable).

PCT FILED APPLICATION ENTERING NATIONAL STAGE

- ☒ was described and claimed in International application No. PCT/FR00/00598 filed on MARCH 10, 2000 and as amended on _____ (if any).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

PRIORITY CLAIM

I hereby claim foreign priority benefits under 35 USC 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

PRIOR FOREIGN APPLICATION(S)

Country	Application Number	Date of Filing (day, month, year)	Priority Claimed
FRANCE	9903012	11/03/99	YES

(Complete this part only if this is a continuing application.)

I hereby claim the benefit under 35 USC 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of 35 USC 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37 Code of Federal Regulations §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)

(Filing Date)

(Status--patented, pending, abandoned)

POWER OF ATTORNEY

The undersigned hereby authorizes the U.S. attorney or agent named herein to accept and follow instructions from _____ as to any action to be taken in the Patent and Trademark Office regarding this application without direct communication between the U.S. attorney or agent and the undersigned. In the event of a change in the persons from whom instructions may be taken, the U.S. attorney or agent named herein will be so notified by the undersigned.

As a named inventor, I hereby appoint the registered patent attorneys represented by Customer No. 000466 to prosecute this application and transact all business in the Patent and Trademark Office connected therewith, including: Robert J. PATCH, Reg. No. 17,355, Andrew J. PATCH, Reg. No. 32,925, Robert F. HARGEST, Reg. No. 25,590, Benoit CASTEL, Reg. No. 35,041, Eric JENSEN, Reg. No. 37,855, Thomas W. PERKINS, Reg. No. 33,027, and Roland E. LONG, Jr., Reg. No. 41,949,

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00466

PATENT TRADEMARK OFFICE

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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(given name, family name)

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(given name, family name)

Inventor's signature _____ Date _____

Residence: _____ Citizenship: _____

Post Office Address: _____

Full name of fourth joint inventor:
(given name, family name)

Inventor's signature _____ Date _____

Residence: _____ Citizenship: _____